AMENDMENTS TO THE SPECIFICATION:

Please amend paragraph [0017] as follows:

[0017] Springs known per se, which act in the direction of oscillation/movement of its armature part can be used for the[[rive]] drive unit according to the invention. It appears particularly suitable to use at least one spring, preferably two leaf springs. These leaf springs are selected for the following exemplary embodiment. They make it possible to nevertheless achieve sufficiently good lateral stabilisation or retaining of the oscillating armature part perpendicular to its direction of movement with a low stiffness or spring constant k in the direction of oscillation/movement perpendicular to the plane of the spring. Naturally, other types of springs such as helical or coil springs can also be used. Bearings can also be provided in a known manner for lateral guidance.

Please delete paragraphs [0026] through [0050], and replace them with the following paragraphs:

[0026] The magnitude of the electromagnetic force acting on the armature F_{el} should either be zero or have a fixed value, the sign of the force always being selected so that the force acts in the direction of movement. The electrical force F_{el} is only non-zero for a fraction a of the distance ($0<a<1$; a is hereinafter designated as "duty cycle"). Let k be the sum of the spring constants in the direction of movement and x_0 the rest position of the spring with respect to the centre position of the armature.

[0027] For $\dot{x} < 0$ which corresponds to the return travel away from the compressor, the energy supplied electrically to the armature is given by

$$E_{el-} = F_{el} \cdot 2L \cdot a, \qquad \text{Eq. 1}$$

and from the armature dead-centre point $x = +L$ to the armature dead-centre point $x = -L$ the potential energy of the spring varies by

$$\Delta E_{Feder} = (k/2)(-L - x_0)^2 - (k/2)(L - x_0)^2 . \qquad \text{Eq. 2}$$

[0028] Both energies must be the same, i.e.

$$\Delta E_{Feder} = E_{el-} . \qquad \text{Eq. 3}$$

[0029] For $\dot{x} > 0$, which corresponds to the forward travel towards the armature, the energy supplied electrically to the armature (in turn) is given by

$$E_{el+} = F_{el} \cdot 2L \cdot a, \qquad \text{Eq. 4}$$

and from the armature dead-centre point $x = -L$ to the armature dead-centre point $x = +L$ the potential energy of the spring varies by $-\Delta E_{Feder}$.

[0030] The total electrical energy $E_{el} = E_{el+} + E_{el-}$ supplied within an oscillation for a constant oscillation amplitude L and negligible friction must be equal to the energy used in the compressor E_{comp}. The electrical force (assumed to be constant) is thus obtained as

$$F_{el} = \frac{E_{comp}}{4L \cdot a} . \qquad \text{Eq. 5}$$

[0031] If the spring constant k and the electrical energy E_{el-} (i.e. the electrical force F_{el} the oscillation amplitude L and the duty cycle a) are given, the required spring rest position can be calculated by substituting Eq. 1 and Eq. 2 into Eq. 3:

$$x_0 = \frac{E_{el-}}{2k \cdot L} = \frac{F_{el} \cdot 2L \cdot a}{2k \cdot L} = \frac{F_{el} \cdot a}{k} . \qquad \text{Eq. 6}$$

[0032] From Eq. 6 it can be seen that:

[0035] The spring must always be pre-stressed in the positive direction and the pre-stressing distance is shorter, the higher the spring constant k.

[0034] Method for Spring Design

[0035] The spring should be designed to that the armature oscillates symmetrically in the yoke with respect to $x=0$ (i.e. between $x=-L$ and $x=+L$), wherein the frequency f of the armature oscillation approximately corresponds to a target value f_{target}.

[0036] For a given armature mass, oscillation amplitude L and compressor characteristic, the oscillation frequency f is only dependent on two quantities: the spring constant k and the *duty cycle*. It holds that:
the larger k, the greater is f;
the smaller a, the larger is f.

[0037] The spring can be designed as follows:
1. Specifying the oscillation amplitude L and determining the compressor energy E_{comp} under standard conditions where an optimal design of spring is strived for.
2. Specifying the duty cycle a and calculating the electrical force F_{el} according to Eq. (5) (or calculating the coil current corresponding to the force).
3. Specifying the spring constant k and calculating the spring rest position x_0 using Eq. 6.
4. Simulating the spring-compressor-mass system assumed for FIG. 3 and determining the oscillation frequency f.
5. If f and the target value f_{target} differ too substantially from one another, return to 2. (change the duty cycle a) or 3. (change the spring constant k).

[0038] Example Calculations

[0039] The example calculations relate to a known compressor with a stroke of $2L=20$ mm and standard pressure conditions (p_{max}-p_{min}=(7.7-0.6) bar). Since the dead volume is assumed to be vanishingly small, it produces no restoring force. The mechanical work

performed per oscillation in the compressor under these conditions is 0.7753 J. If the mechanical power should be 40 W, an oscillation frequency of 51.6 Hz is required.

[0040] In the simulation block diagram according to FIG. 3, m (mass) and c (coefficient of friction) have values of 90 g and 0.336 Ns/m.

[0041] In the following table the duty cycle a and the spring constant k should be considered to be initial quantities whereas the electrical force F_{el}, the spring rest position x_0 and the oscillation frequency f are the results of the calculation.

[0042]

Duty cycle a [-]	Spring constant k [N/mm]	Electrical force F_{el} [N]	Rest position x_0 [mm]	Frequency f [Hz]
1.0	2.50	19.4	7.8	35.2
0.8	2.50	24.2	7.8	40.4
0.5	2.50	38.8	7.8	46.2
0.7	5.00	27.7	3.9	51.0